

IN THE CLAIMS

This listing of claims replaces all prior versions and listings of the claims in the above-referenced application.

1. (Currently Amended) A light emitting device comprising:
 - a light emitting diode;
 - a submount;
 - a phosphor material disposed around at least a portion of said light emitting diode;and
 - an underfill between a first surface of the light emitting diode and a first surface of the submount, wherein the underfill has characteristics to reduce contamination of the light emitting diode by the phosphor material, and wherein the underfill comprises a material selected from a group consisting of cyanate ester resin, epoxy resin, epoxy, urethane, acrylate, and any combination thereof.
2. (Original) The light emitting device of claim 1, wherein the light emitting diode has a reflective layer.
3. (Original) The light emitting device of claim 2, wherein the reflective layer comprises silver.
4. (Original) The light emitting device of claim 1, wherein the submount comprises a silicon substrate.
5. (Original) The light emitting device of claim 1, wherein the phosphor material comprises a material selected from a group consisting of strontium thiogallate, calcium thiogallate, strontium sulfide, and any combination thereof.
6. (Original) The light emitting device of claim 1, wherein the phosphor material comprises a sulfur compound.
7. (Previously Presented) The light emitting device of claim 1, wherein the

phosphor material is included in a phosphor formulation, the phosphor formulation further comprising a gettering compound, the gettering compound comprising a gettering ion and a counter-ion, said gettering ion comprising a material selected from a group consisting of Group VA elements, Group VB elements, Group VIB elements, Group IVA elements, organic ligands, and any combination thereof.

8. (Cancelled).

9. (Original) The light emitting device of claim 1, wherein the underfill comprises a filler.

10. (Original) The light emitting device of claim 9, wherein the filler comprises a material selected from a group consisting of silicon dioxide, fumed silica, titanium dioxide, inorganic silicates, inorganic clays, inert metals, metal oxides, and any combination thereof.

11. (Original) The light emitting device of claim 9, wherein the filler is reflective.

12. (Original) The light emitting device of claim 1, wherein the underfill comprises a gettering compound, the gettering compound comprising a gettering ion and a counter-ion, said gettering ion comprising a material selected from a group consisting of Group VA elements, Group VB elements, Group VIB elements, Group WA elements, organic ligands, and any combination thereof.

13. (Original) The light emitting device of claim 12, wherein the underfill further comprises fumed silica.

14. (Original) The light emitting device of claim 12, wherein the gettering ion comprises a material selected from a group consisting of chromium, molybdenum, tungsten, vanadium, niobium, tantalum, bismuth, hafnium, lead, and any combination thereof.

15. (Original) The light emitting device of claim 12, wherein the gettering ion and a sulfide ion form a compound with a solubility product less than about 10^{-30} .

16-21. (Canceled).

22. (Previously Presented) The light emitting device of claim 12, wherein the counter-ion is one of sulfate and citrate.

23. (Previously Presented) The light emitting device of claim 7, wherein the gettering compound comprises about one to about ten weight percent of the phosphor formulation.

24. (Previously Presented) The light emitting device of claim 1, wherein the light emitting diode is mounted on the submount.

25. (Previously Presented) The light emitting device of claim 1, further comprising a coating comprising a gettering compound, the gettering compound comprising a gettering ion and a counter-ion, the coating being disposed between the light emitting diode and the phosphor material.

26. (Previously Presented) The light emitting device of claim 25 wherein the coating comprises a carrier selected from the group of two part curable silicon, epoxy, and acrylic.

27. (Previously Presented) A structure comprising:
a semiconductor light emitting device;
a submount;
a material containing a phosphor disposed around at least a portion of semiconductor light emitting device; and
an underfill disposed in at least a portion of a space between the semiconductor light emitting diode and the submount such that the underfill completely fills the space between the semiconductor light emitting device and the submount and forms a physical barrier that prevents the phosphor-containing material from occupying the space.

28. (Previously Presented) The structure of claim 27, wherein the underfill

comprises a material selected from a group consisting of cyanate ester resin, epoxy resin, epoxy, urethane, acrylate, and any combination thereof.

29. (Previously Presented) The structure of claim 27, wherein the underfill comprises a filler.

30. (Previously Presented) The structure of claim 29, wherein the filler comprises a material selected from a group consisting of silicon dioxide, fumed silica, titanium dioxide, inorganic silicates, inorganic clays, inert metals, metal oxides, and any combination thereof

31. (Previously Presented) The structure of claim 29, wherein the filler is reflective.

32. (Previously Presented) The structure of claim 27, wherein the underfill comprises a gettering compound, the gettering compound comprising a gettering ion and a counter-ion.

33. (Canceled).

34. (Previously Presented) A structure comprising:
a semiconductor light emitting device;
a material containing a phosphor disposed around at least a portion of semiconductor light emitting device; and

a gettering compound comprising a gettering ion and a counter-ion, the gettering compound positioned to prevent the phosphor-containing material from contaminating the semiconductor light emitting device.

35. (Previously Presented) The structure of claim 34 wherein the gettering compound is included in a coating disposed between the phosphor-containing material and the semiconductor light emitting device.

36. (Previously Presented) The structure of claim 34 wherein the gettering

compound is included in the material.

37. (Previously Presented) The structure of claim 34 wherein the semiconductor light emitting device is mounted on a submount, and the gettering compound is included in an underfill disposed between the semiconductor light emitting device and the submount.

38. (Previously Presented) The structure of claim 34 wherein the gettering ion comprises a material selected from a group consisting of Group VA elements, Group VB elements, Group VIB elements, Group IVA elements, organic ligands, and any combination thereof.

39. (Previously Presented) The structure of claim 34, wherein the counter-ion is one of sulfate and citrate.

40. (Previously Presented) The structure of claim 34, wherein the semiconductor light emitting device includes a contact comprising silver.

41. (Previously Presented) The structure of claim 34, wherein the phosphor comprises a material selected from a group consisting of strontium thiogallate, calcium thiogallate, strontium sulfide, and any combination thereof.

42. (Previously Presented) The structure of claim 34, wherein the phosphor comprises a sulfur compound.

43. (Previously Presented) The structure of claim 34, wherein the gettering ion comprises a material selected from a group consisting of chromium, molybdenum, tungsten, vanadium, niobium, tantalum, bismuth, hafnium, lead, and any combination thereof.

44. (Previously Presented) The structure of claim 34, wherein the phosphor comprises a sulfide ion, and wherein the gettering ion and the sulfide ion form a compound with a solubility product less than about 10^{-30} .

PATENT LAW
GROUP LLP
2411 N. FIRST ST.
SUITE 222
SAN JOSE, CA 95134
(408) 592-0480
(FAX) (408) 592-0481